

ABSTRACT

In order to provide a semiconductor device having good quality by keeping the relative permittivity of a High-K insulation film in a high state, or to provide a method for manufacturing a semiconductor device in which the relative permittivity of the High-K insulation film can be kept in a high state, a semiconductor device is disclosed that includes a silicon substrate, a gate electrode layer, and a gate insulation film between the silicon substrate and the gate electrode layer. The gate insulation film is a high relative permittivity (high-k) film being formed by performing a nitriding treatment on a mixture of a metal and silicon. The High-K film itself becomes a nitride so as to prevent SiO_2 from being formed.